

OVERVIEW OF

The Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards

Rule to achieve significant emission reductions and protect public health

In December 2005, the California Air Resources Board (ARB) approved a regulation to reduce emissions from mobile cargo handling equipment vehicles operating at California's ports and intermodal rail yards.

What is mobile cargo handling equipment?

Mobile cargo handling equipment is any motorized vehicle used to handle cargo delivered by ship, train, or truck, or used for scheduled or routine maintenance activities. The type of equipment used depends on the type of cargo handled or the type of activity. Equipment that handles cargo containers includes yard trucks, top handlers, side handlers, reach stackers, forklifts, and rubber-tired gantry (RTG) cranes. Equipment that is used to handle bulk cargo includes dozers, excavators, loaders, and railcar movers. While forklifts can be used in either container or bulk cargo operations, for the purposes of this regulation, they are considered to be container handling equipment. Forklifts, aerial lifts, and other types of equipment used in maintenance operations at ports and intermodal rail yards are also considered cargo handling equipment. However, the regulation does not apply to equipment used for construction purposes. While the regulation originally included sweepers and mobile cranes (other than RTG cranes), regulatory changes are expected to place those vehicles under either the on-road truck and bus rule or the in-use off-road diesel vehicle regulation by the end of 2009. Additional information is available on our website at <http://www.arb.ca.gov/ports/cargo/documents/cranesweeper.pdf>.



Rubber-Tired Gantry Crane

What does the Cargo Handling Equipment Regulation require?

The regulation, effective December 6, 2006, establishes best available control technology (BACT) for new and in-use cargo handling equipment that operate at California's ports and intermodal rail yards. Below is a list of the general requirements. A more detailed explanation can be found in the staff report, which is available on our web site at <http://www.arb.ca.gov/regact/cargo2005/cargo2005.htm>.



Yard Truck

New Yard Trucks: For DMV-registered on-road vehicles, the new equipment must be equipped with a certified on-road engine meeting the current model year engine standards. New yard trucks that are not DMV-registered on-road vehicles must be equipped with either a certified on-road engine meeting the current model year standards or a certified final Tier 4 off-road diesel engine.

New Non-Yard Truck Equipment: New Non-yard truck equipment must be equipped with a certified on-road engine meeting the current model year standards or certified Tier 4 off-road diesel engine. If neither is available, the engine must be certified to the highest level off-road diesel engine standards, and

the highest level available verified diesel emission control strategy (VDECS) must be installed within one year (or within 6 months of the VDECS becoming available).

In-use Yard Trucks: The regulation requires in-use yard trucks to meet BACT performance standards primarily through accelerated turnover of older yard trucks to those equipped with cleaner, certified on-road engines (meeting current model year standards). Owners or operators who have installed a VDECS prior to the end of 2006, or who are already using certified on-road engines, are given additional time to comply. In addition, compliance is phased in for owners and operators who have more than three yard trucks in their fleet.

In-use Non-Yard Truck Equipment: Non-yard truck equipment are also required to meet BACT, which, for them, is a menu of options that includes replacement to cleaner on-road or off-road engines and/or the use of retrofits. For owners or operators that elect to use retrofits, a second compliance step, which would require replacement to Tier 4 off-road engines or installation of a Level 3 VDECS (85 percent diesel PM reduction), may be required, depending on the equipment category and level of VDECS applied.

Compliance Schedule: Compliance with the regulation is phased in beginning in 2007 based on the age of the engine, whether or not it is equipped with VDECS, and the size of the fleets. The regulation includes provisions that would allow operators to delay compliance with the in-use performance standards if an engine is within one year of

retirement, if no VDECS are available for non-yard truck equipment, if an experimental diesel PM emission control strategy is used for non-yard truck equipment, or if there are delivery delays.

The regulation also includes an alternative compliance plan (ACP) option for owners and operators of non-yard truck cargo handling equipment. In order to receive approval for the ACP, owners or operators would be required to demonstrate that equivalent emission reductions can be achieved through the use of alternative strategies, which can include early engine or equipment replacement, alternative fuels or fuel additives, exhaust treatment controls, or equipment engine modifications. Implementation guidance for the ACP is available on our web site at the following address:

<http://www.arb.ca.gov/ports/marinevevss/documents/guidance1206.pdf>.



Recordkeeping and Reporting: Recordkeeping and reporting requirements are also defined in the regulation. Owners and operators are required to maintain records for all mobile cargo handling equipment, submit a compliance plan for their mobile cargo handling equipment, and perform annual reporting by submitting to the ARB their contact information and location of their equipment, and a demonstration of compliance for vehicles that have complied during the year. Compliance plans and the first annual report were due to the ARB on January 31, 2007.

Why did ARB staff develop a regulation for cargo handling equipment?

ARB staff developed a regulation to reduce emissions of diesel particulate matter (PM) and oxides of nitrogen (NOx) from new and existing (in-use) mobile cargo handling equipment at ports and intermodal rail yards. Diesel engines used in cargo handling equipment emit a complex mixture of air pollutants, composed of gaseous and solid material. The solid particles in diesel exhaust, which at times may be visible, are known as particulate matter, which includes carbon particles or "soot". In 1998, ARB identified diesel PM as a toxic air contaminant based on its potential to cause cancer and other health problems. Health risks from diesel PM are highest in areas of concentrated emissions, such as near ports, rail yards, freeways, or warehouse distribution centers. Exposure to diesel PM is a health hazard, particularly to children whose lungs are still developing, and the elderly who may have other serious health problems.

What are the emissions and health impacts associated with cargo handling equipment?

ARB staff estimates mobile cargo handling equipment at ports and intermodal rail yards emit approximately 237 tons per year (0.65 tons per day) of diesel PM and 6,950 tons per year (19 tons per day) of NOx in 2004. These emissions can result in significant near-source potential cancer risks. For example, nearly 75 percent of the two million people living in the area around the ports of Los Angeles and Long Beach have a potential cancer risk of greater than 10 in a million due in part to the emissions from cargo handling equipment. These risk values assume an individual was exposed for 70 years. They also result in potential non-cancer impacts such as premature deaths, asthma attacks, and lost work days.

What are the benefits of the regulation?

ARB staff estimates that, with implementation of the rule, diesel PM emissions and associated cancer risk from cargo handling equipment will be reduced by approximately 80% (1.7 million pounds) by 2020 relative to the 2004 baseline levels. California's air quality will also experience benefits from reduced NOx emissions, resulting in a cumulative reduction of approximately 37 million pounds by 2020, relative to the 2004 baseline levels. These reductions in diesel PM and NOx will also prevent approximately 32 cumulative premature deaths as well as reduce many other non-cancer health effects.

How much will the regulation cost?

ARB staff estimates the total cost of compliance with the regulation for affected businesses will be approximately \$71 million in total capital and recurring costs. The ARB estimates the cost-effectiveness of the rule making to be about \$41 per pound of diesel PM reduced considering only the benefits of reducing diesel PM. Because the regulation will also reduce NOx emissions, half of the costs of compliance could be allocated against these benefits, resulting in cost effectiveness values of approximately \$21 per pound of diesel PM and \$1 per pound of NOx reduced. We also anticipate significant health cost savings due to reduced mortality and reduced incidences of cancer and non-cancer illnesses.

For more information

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